The ADIC

VirOp Version 1.1 for ADSM Administration Guide

Advanced Digital Information Corp

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Advanced Digital Information Corporation
Telephone: (303) 705-3900
Fax: (303)792-2465
Customer Assistance: (800) 827-3822
World Wide Web: http://www.adic.com

ADIC Europe
Z.A. du Bel-Air
21 avenue Saint-Fiacre
78100 - Saint-Germain en Laye, FRANCE
Telephone: 33.1.3087.5300
Fax: 33.1.3087.5301

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Introduction

Overview

The VirOp software integrates the ADIC Automated Media Libraries (AML) with the IBM ADSM server product. It allows an AML to be defined as an external library to ADSM. Whenever ADSM requires media from the ADIC AML, the media is request via the VirOp software.

The small VirOp executable is selected whenever an ADIC library is defined as an external library to ADSM. The VirOP executable performs the necessary processing requested by ADSM through the Distributed AML Server (DAS) Application Program Interface (API) AML Client Interface (ACI). All delivered scripts run in a Korne-Shell. If errors occur in the processing of the request, the appropriate response is returned to ADSM. ADSM then logs the problem.

Intended Audience

This document is intended for users of ADIC libraries, DAS software, VirOp software, and ADSM.

Organization

This publication contains chapters detailing the operation of the VirOp software. The chapters topics include:

Chapter 1	*Introduction* - Describes the VirOp software, the chapter subjects, associated documents, symbols and notes, and requests for support.
Chapter 2	*Installation* - Describes the system requirements and installation process.
Chapter 3	*Setup* - Describes the VirOp software configuration.
Chapter 4	*ADSM Configuration* - Describes ADSM setup.
Chapter 5	*Scratch Handling* - Describes scratch volume handling.
Chapter 6	*DAS Configuration* - Describes the step to configure DAS.

Chapter 7	*Scratch Labeling* - Describes the scripts use to mount, label, and dismounting a range of volumes.
Chapter 8	*EMM Commands without ADSM* -Describes how to run EMM commands without ADSM.
Chapter 9	*Error Messages* - Describes where to find error messages.
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Associated Documents

DAS Administration Guide

ADSM Administration Guide
(must be obtained through IBM, Corp.)

Explanation of Symbols and Notes

The following symbols and highlighted passages note important information.

<1> + <2>	Press these keys simultaneously.
Italics	Headline, e. g., Chapter 2, *Description* File name, e. g., *AMUINST.EXE*
Bold	Terms appearing on the operating panel Special Term, e. g., **Utilities** Commands with or without parameters, e.g., **INITIALIZE** Operating element / key on the operating panel
`Courier`	Command appearing on a console, e.g., `cd` Switch position, e. g., `ON, OFF`

Assistance

If problems cannot be solved with the aid of this document or if recommended training is desired, contact the ADIC Technical Assistance Center (ATAC).

- United States 1-800-827-3822
- Germany / Africa 00.800.9999.3822
- France 33.1.3087.5300

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Installation

Overview

The requirements for installing and executing the VirOp version 1.1 software are as follows:

- An ADIC AML library
- ADSM version 2 or later
- a supported AIX operating system
- ADIC DAS software.

The following platform dependent software releases are required for version 1.1:

Table 2-1 Software Release to Platform Requirements

Software	Version
AIX	AIX 4.1 or higher
ADSM	2 with PTF level 15, or higher version
DAS	1.30C7 or higher
AMU	2.40 or higher

Installation

The distribution files for the VirOp software are contained within a tar archive file. The tar file consists of a *Readme* text file, the VirOp executable, a setup script, and a utils directory of scripts. Procedures are listed to extract the file on either a UNIX machine or a PC.

All previous versions of the VirOp software will be overwritten. Manually save the old version of the VirOp software if needed.

Information on the diskette will tell you weather you can directly use the **tar** command to copy the contents to the installation directory or not. If this information is not on the diskette, the diskette contains a tar-file which can be copied from a PC with ftp, to the installation directory

To extract these files from a UNIX machine, proceed as follows:

Step 1 Create the directory `/usr/local/virop`

Step 2 Create the directory `/usr/local/aci` if it does not already exist. This directory is where the ACI is installed. For further information, refer to *The DAS Administration Guide*.

`/usr/local/aci` is required.

Step 3 Place the diskette in the UNIX machine.

Step 4 Change to the directory `/usr/local/virop`

Step 5 Use the tar extract command **tar -xvf /dev/...** where */dev/...* is the file name where the diskette is mounted.

To extract these files from a PC, proceed as follows:

Step 1 Create the directory `/usr/local/virop`

Step 2 Create the directory `/usr/local/aci` if it does not already exist. The directory is where the ACI is installed. For further information, refer to *The DAS Administration Guide*

`/usr/local/aci` is required

Step 3 Place the diskette in the PC.

Step 4 Copy the file to the desired directory.

Step 5 Change to the directory.

Step 6 On the PC, use the **FTP** command to put the tar file on the UNIX machine at the `/usr/local/virop` directory.

Step 7 On the UNIX machine, use the tar extract command **tar -xvf** *tarfile.*

Run the setup script to step through the stages of installation and configuration of the VirOp software.

If the installation steps are followed, the setup script is located in the `usr/local/virop` directory.

If you running AIX between version 4.1 and 4.2, replace virop_debug and virop_nodebug in `/usr/local/bin` with virop_debug_41 and no_debug_41 from `/usr/local/virop/bin`. Also, change the softlink ‘virop’ to virop_nodebug_41.

If any problems are experienced which are not resolved, contact ATAC.

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VirOp Setup

Overview

The setup script manages both the installation and configuration of the VirOp product. The primary options of the setup are the Install, Configure Drives and Configure Libraries. The options may be chosen in any order.

Setup

Setup uses the EDITOR environment variable to choose a comfortable editor. If this variable is not set, a prompt is provided for the editor name. To avoid this prompt, ensure that the EDITOR variable is set to a comfortable editor.

Example export EDITOR=vi

The script creates files in the `/usr/local/` directory structure. This normally requires root privileges, therefore, verify that root privileges are available prior to running setup.

Follow the steps below to set up the VirOp software.

Step 1 Install the VirOp software

Step 2 Configure Drives

Step 3 Configure Libraries

Install Option

The install option simply moves the VirOp executable to the `/usr/local/bin` directory.

The virop_debug, virop_nodebug binaries and a “virop” soft link should appear after the installation process. The soft link points to virop_nodebug. If problems occur, the link can be changed to virop_debug. More debug information can be obtained with this binary. A log file is created in /usr/local/aci/logs. It is recommended to run virop with virop_debug only if problems occur. The log file will not be deleted if space runs out.

Configure Drives

Normally, with ADSM, the **Define Drive** admin command is used to associate a drive name with a special file e.g., DLT3 to `/dev/mt/3`.

When the library is defined as external, this no longer holds true. After ADIC library is defined as External to ADSM, ADSM only knows the drives inside the library by their special file name. When ADSM wants to mount a volume, it requests that the mount be on any available drive. The VirOp product is task with selecting a drive and responding with the respective special file name.

The VirOp product acts as a client to the ADIC DAS product to identify drives with DAS. This requires the configuration option to map drive names to special file names. This option steps through mapping setup. The descriptive drive name in the AMU should be used as the drive name.

Any mistakes entering the drive names can be corrected by editing the prepared configuration file. When complete, the mapping is saved in the `/usr/local/aci/VirOp_drives` configuration file.

Drive Naming

If the library is used by ADSM only, the naming convention is arbitrary. When the 1 - 9 characters and alphanumeric names are selected, setting these names in the AMU (the ADIC AML controller) is required. Refer to *DAS Administration Guide*.

Adding Drives

To add drives, run this option again. The option appends the new drives to the existing drives in the configuration file.

Ensure that All Drives are Defined

Ensure that all of the drives that ADSM could possibly use are in this mapping. If a drive is missing, any mount on the drive results in a syslog message. The message indicates that the VirOp product was unable to map the drive to a special file name. In such a case, the VirOp product cannot take the drive off-line. This leaves the volume in the drive and removes it from the available pool of drives.

Drive Availability

Drives are made available to ADSM by allocating them to the External library DAS client. Refer to *Configure Libraries* on page 3-5. This is done by using the DAS dasadmin **allocd** command. With the VirOp product, the mount requests from ADSM are not drive specific. The VirOp product relies on the DAS software to select an available drive for the client. A drive is only available to a client if the physical requirements of the volume are met and it is allocated to the client. Therefore, allocate the drives that ADSM will access.

Configure Libraries

Conceptually, an ADSM external library is equivalent to a DAS client. Each external library defined to ADSM must have a DAS server and DAS client name associated with it. Depending on the configuration of a DAS client, this allows an external library definition to be a partition of a library or a whole library. To support ADSM V3, a new parameter is required when configuring the library. The library eject area must be supplied.

This option allows mapping of the external library name to the DAS server name, DAS client names and library eject area. When mapping is completed, the mapping is saved in the */usr/local/aci/VirOp_libs* configuration file.

Defaulting External Libraries to DAS Clients

As a default option, the configuration file does not have to exist or it can have some of the external libraries defined. To completely default your library mapping, do not use this option. Otherwise, use the edit session and empty the configuration file contents. For those External libraries not in the configuration file, the VirOp product takes the external library name and use it as both the DAS server and DAS client name. For this default configuration to work, the TCP host name of the OS/2 PC running the DAS and AMU and the ADSM client must have the same name as the external library.

Multiple ADSM Servers

When two or more ADSM servers are running on the same host, the same library configuration file is read by the VirOp product. It is possible to run this arrangement in either of two ways. Either define the AML as one External library to both ADSM servers or define the AML as one (or more) External libraries for each server on the host. Running as one External library allows a single pool of drives to be made available to all ADSM servers. Defining different External libraries means there must be separate pools of drives for each External library.

Update Drive Config

This option starts an edit session with the */usr/local/aci/VirOp_drives* drive configuration file.

Update Library Config

This option starts an edit session with the */usr/local/aci/VirOp_libs* library configuration file.

Help

This option displays the *Readme* file.

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ADSM Configuration

Overview

ADSM version 2 contains a new library type; EXTERNAL. The VirOp program uses this type to integrate ADSM with the ADIC libraries.

ADSM Configuration

To define a library as External, enter an ADSM client session with either system or unrestricted storage privilege. For each External library to define, use the following template:

Define Library *external library name* EXTernal LIBType=EXTernal

EXTERNALManger=*/usr/local/bin/virop*

For a defined external library, the **define drive** command can not be used to define a drive. ADSM knows the drives by their special file name. The mapping is specified in the file VirOp_drives that is responsible for using the correct AMU drive name.

To make volumes available for ADSM, use the **define volume** command or the *gcheckin* script of the VirOp program. Ensure that the volumes are labeled. Refer to *Label Script* on page 7-3.

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Scratch Handling

Overview

Scratch processing is straightforward for the VirOp software. ADSM provides the scratch management and VirOp software satisfies the requests to give and return scratch volumes.

Scratch Handling

When ADSM requires a new volume for a storage pool, it requests a mount of a scratch volume. When mounted, the volume is marked as non-scratch to the AMU database and ADSM assigns the volume to the storage pool. Once all data on a volume has expired, ADSM requests that VirOp software released the volume back into the scratch pool.

The default scratch pool is used to satisfy all ADSM scratch requests. The label script, refer to *Label Script* on page 7-3, can be used with the [-*s*] option. This option requests that, after the ADSM label have been written to the volume, it is added back to the default scratch pool.

It is not essential to use scratch volumes with ADSM. It is possible to define volumes to each storage pool and ADSM does not request any scratch volumes while space is available.

There are two methods to define volumes to a scratch pool:

- Use the dasadmin commands. Refer to *DAS Administration Guide*.
- Use the *label* script with the [-s] option. Refer to *Label Script* on page 7-3.

Scripts

All scripts use the **rsh** command to the AMU PC and “amu” as the default host name. The scripts must be adapted if another name is being used.

Reclaim

The Reclaim script has to be adapted to the environment. Please read all comments in the script. Reclaims media for scratch. Reclaim looks at each volume in the library and checks whether the volume is known to ADSM. If it is not known to ADSM, it will be made scratch if it is not already. If it is known to ADSM and the volume is scratch, it will be unset. In this case, if the volume is not in the pool list (that is, neither scratch or non-scratch) the volume is left alone.

Syntax: reclaim [pool list]

If the pool list is defaulted, it will attempt to retrieve it from the AMU via a **rsh** command. The rsh authorization must be setup for the user running this reclaim script.

If the **rsh** authorization command has been setup, the *pool_list* does not have to be specified, otherwise *pool list* is a file with the output of the **db2_showpool** command. For example:

Issue the **db2_showpool** command which is located on the AMU PC under the `c:\das\tools\db2` directory, and direct the output of the command into the *PoolList* file. If you issue the *reclaim* script, the *PoolList* file should be located in the same directory of the *reclaim* script. The command would be: **reclaim PoolList**.

Show_pool

Remotely issue the **db2_showpool** command, which is located on the AMU PC in the DAS directory under `tools\db2`.

Show_scratch

Remotely issue the **db2_showscratch** command, which is located on the AMU PC in the DAS directory under `tools\db2`.

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DAS Configuration

Overview

There are three steps to configuring the DAS product. The following section outlines the steps.

Required DAS Configuration

Follow these steps:

Step 1 Configure a clientstatement for the ADSM client in the DAS config files. Refer to *DAS Administration Guide*.

Step 2 Use option=(no_avc,dismount) for the option.

Step 3 Use scratchpools=((ALL)) for the scratchpool.

Step 4 Allocate all necessary drives for the ADSM client.

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Labeling Script

Overview

The *label* script automates the mounting, labeling (dsmlable is the ADSM label program) and dismounting a range of volumes.

Label Script

Ensure that the DAS environment variables in the *label* script are set correctly. If not, change the variable in the script to the appropriate value.

Example	label *start-number stop-number label-prefix device-name drivename [-s]*
Parameter	**Value**
start-number	a numeric range which when used with the stop-number parameter creates a range of volumes to be labeled
stop number	must be greater than the start-number parameter value
label-prefix	a prefix for all volumes in the range
device-name	the file name of the drive where the volume should be placed and the label should be written
drivename [-s]	the DAS name for the same drive -s indicates that after the volume is labeled, it is made scratch in the default scratch pool of its media type
Set DAS_SERVER	to the amu hostname
Set DAS_CLIENT	to the DAS client which will mount and dismount the drives during the label processing
Set ACI_MEDIA_TYPE	to the media type of the volumes to be labelled For 3590 use ‘3590’ For DLT use ‘DECDLT’ For AIT use ‘8MM’

Set DAS_Home — to the home directory of the aci components, this is `/usr/local/aci` default.

ADSM_HOME is set by default to /usr/lpp/adsmserv in case of AIX as the operating system.

Example: Label 1 35 ADS /dev/mt/0 DLT0

The example runs dsmlabel against volumes ADS001 to ADS035 on drive DLT0

The command runs the labeling against one drive. If more drives are available, run multiple copies of the *label* script using a different volume range on a different drive.

If a problem occurs during labeling, the name of the last labeled volume is kept in the file *lastlabeled_drive-name* in the current directory. Once the problem is remedied, rerun the *label* script started from volume named in the *lastlabeled_drive-name* file.

Note
The command ensures a six character volume label by padding the length with the 0 character.

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EMM Commands without ADSM

Overview

A method exists to test the EMM commands without running ADSM.

Using EMM commands without ADSM

Follow the steps to test the EMM commands without ADSM:

Step 1 Start the VirOp software by entering the **virop** command in the install directory.

Step 2 Issue the EMM **INITIALIZE** command to initialize the library.

Step 3 Enter the desire EMM command.

Note
Use the *ADSM Administrative Guide* to find the proper syntax for the EMM commands

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Error Messages

Overview

The VirOp software does not generate an error log file. If errors occur in mount, dismount or scratch processing, the error response from the VirOp software is logged in the ADSM log.

Error Messages

Very rarely does the VirOp software needs to write to syslog. If a problem occurs, such as detection of a protocol problem with an ADSM EEM command or a configuration problem, and there is no visible output in the ADSM log, check the syslog. The VirOp software may be placing the error message in the syslog. These messages will carry an identification of *ADIC ADSM VirOp.*

ADSM Tracing

When ADSM and / or the VirOp software encounter problems, the ADSM trace functionality can be used. This functionality can be enabled with the following ADSM commands entered on the ADSM console:

- `trace enable mms`
- `trace begin` *optional filename*

The optional filename made be specified to redirect all output from the trace to the file.

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